

Identification and characterization of the optimal human neural stem cell line (hNSC) for the treatment of traumatic brain injury (TBI) 2.0.

Grant Award Details

Identification and characterization of the optimal human neural stem cell line (hNSC) for the treatment of traumatic brain injury (TBI) 2.0.

Grant Type: Quest - Discovery Stage Research Projects

Grant Number: DISC2-10195

Project Objective: Identification and characterization of the optimal human neural stem cell line (hNSC) for the treatment of traumatic brain injury (TBI).

Investigator:

Name:	Brian Cummings
Institution:	University of California, Irvine
Type:	PI

Disease Focus: Stroke, Neurological Disorders

Award Value: \$1,671,213

Status: Active

Grant Application Details

Application Title: Identification and characterization of the optimal human neural stem cell line (hNSC) for the treatment of traumatic brain injury (TBI) 2.0.

Public Abstract:**Research Objective**

We propose to discover the optimal human neural stem cell candidate for traumatic brain injury. 4 hNSC products (2 ES derived & 2 fetal) will be compared with TBI/vehicle controls, & then each other.

Impact

Traumatic brain injury (TBI) affects more Americans than brain, breast, colon, lung and prostate cancer combined ! There are no approved stem cell therapies for TBI, we hope to change that.

Major Proposed Activities

- Obtain 2 GMP grade human ES cell lines.
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- Expand/sort ESCs to hNSC and produce sufficient quantities to transplant into 18-20 ATN rats at a dose of 500K per animal.
- Test each ES derived hNSC line in an CCI animal model of TBI for efficacy on four different tasks, two for memory and two for emotional changes.
- Obtain 2 GMP grade human fetal cell lines.
- Expand fetal lines to hNSC and produce sufficient quantities to transplant into 18-20 ATN rats at a dose of 500K per animal.
- Test each human fetal derived hNSC line in an CCI animal model of TBI for efficacy on four different tasks, two for memory and two for emotional changes.

Statement of Benefit to California:

1.7 million American's experience a Traumatic Brian Injury (TBI) leading to hospitalization (200,000 Californians), at a cost to society of \$76.5 billion each year (~\$9.3 billion to California). TBI can result in permanent cognitive and emotional deficits. Transplantation of human neural stem cells (hNSCs) could lead to improvements in learning & memory, or emotion that could significantly change a patient's quality of life and have considerable economic impact to the people of California.

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